

Claims:

1. A flow field plate for a fuel cell, the flow field plate having a front side, for defining a chamber with a complementary flow field plate for a membrane electrode assembly, and a rear side, the flow field plate including:

at least two apertures for a reactant gas for supply to said chambers;

on the front side thereof, reactant gas flow field channels;

for each of the apertures, an aperture extension extending on the rear side of the flow field plate;

for each aperture, at least one slot extending through the flow field plate from the back side to the front side thereof, to provide communication between the corresponding aperture extension and the reactant action gas flow channels.

2. A flow field plate as claimed in claim 1 which includes sealing surfaces on the front and rear sides, for forming a seal with adjacent elements of fuel cell, wherein the sealing surface on the front side of the flow field plate includes, for each aperture, a first sealing surface portion enclosing the corresponding aperture and separating at least one slot from the corresponding aperture and on the rear side thereof, a second sealing surface portion enclosing together said at least one slot and the aperture.

3. A flow field plate as claimed in claim 2, which includes, for each of the aperture, a plurality of slots.

4. A flow field plate as claimed in claim 3, wherein each aperture extension is provided with a plurality of projections, defining flow channels extending from the apertures to the slots.

5. a flow field plate as disclaimed in claim 3, which includes:

at least two second apertures for a second reactant gas;

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on the front side thereof, for each second aperture, a second aperture extension and a plurality of second projections provided in the second aperture extension, for abutting complementary projections of a second flow field plate for the second reactant gas.

6. A flow field plate as claimed in claim 5, which includes, on the rear thereof, for each second aperture a rear sealing portion enclosing the corresponding second aperture and on the front thereof, a second, front sealing portion enclosing the corresponding second aperture and associated second aperture extension, wherein the second front and rear sealing portions include sealing surface segments offset from one another.

7. A flow field plate as claimed in claim 6, wherein each sealing surface portion comprises a groove for receiving a seal.

8. A flow field plate as claimed in claim 6 or 7 which includes at least two third apertures for a coolant flow; on the rear side thereof, flow channels providing flow paths between the third apertures for the coolant; and on the front thereof sealing portions enclosing the third apertures.

9. A fuel cell assembly including at least one fuel cell, wherein each fuel cell comprises:

first and second complementary flow field plates including a front sides and rear side, with the front surfaces facing one another and defining a fuel cell chamber;

a membrane electrode assembly and gas diffusion media provided within the fuel cell chamber;

at least two first apertures in each flow field plate for a first reactant gas and at least two second apertures in each flow field plate for a second reactant gas;

wherein the first flow field plate includes: first reactant gas flow channels on the front side thereof; first slots extending from the first reactant gas flow channels to the rear side thereof; for each of the first apertures

2025 RELEASE UNDER E.O. 14176

- 23 -

thereof, on the rear site thereof, a first aperture extension, providing communication between the first apertures thereof and said first slots; and

wherein the second flow field plate includes: second reactant gas flow channels on the front side thereof; second slots extending from the second reactant gas flow channels to the rear side thereof; for each of the second apertures thereof, on the rear side thereof, a second aperture extension, providing communication between the second apertures thereof and said second slots.